



UNITED STATES PATENT AND TRADEMARK OFFICE

mk
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/878,825	06/11/2001	Patrick J. Thrash	38190/207865	3191

826 7590 04/15/2004

ALSTON & BIRD LLP
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000

EXAMINER

DAVIS, ROBERT B

ART UNIT	PAPER NUMBER
----------	--------------

1722

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/878,825	THRASH ET AL.	
	Examiner	Art Unit	
	Robert B. Davis	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-21 and 36 is/are pending in the application.
- 4a) Of the above claim(s) 36 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-5, 10-13 and 17-19 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6-9, 14, 16, 20 and 21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Art Unit: 1722

Response to Amendment

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-14 and 16-21, drawn to a mold assembly, classified in class 425, subclass 129.1.
 - II. Claim 36, drawn to a composite article, classified in class 428, subclass 375.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the article as claimed can be made by another and materially different apparatus such as opposing metal molds clamped by a high-pressure press instead of a vacuum bagging assembly.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Newly submitted claim 36 is directed to an invention that is independent or distinct from the invention originally claimed for the preceding reasons.

Art Unit: 1722

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 36 has been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Leoni et al (US005152949A: figures 1-2G; column 3, line 12 to column 4, line 22; column 5, line 13 to column 6, line 5, and column 9, line 38 to column 10, line 58).

A mold assembly (10) for distributing a resin throughout a dry fiber preform (P) to form a composite structure, said mold assembly comprising: a first mold line tool (14) supporting the dry fiber preform; a plurality of second mold line tools (42, 32) disposed on a portion of the dry fiber preform to form a hard interface between the second mold

Art Unit: 1722

line tool and the portion of the dry fiber preform; a vacuum bag (36) encapsulating the second mold line tool and forming an air-tight seal around the hard interface; a resin supply (26) connected in fluid communication with the dry fiber preform and supplying resin to the hard interface; and a vacuum supply (28) connected in fluid communication with the mold assembly, supplying vacuum pressure to the hard interface and drawing excess resin away from the hard interface such that the composite structure is tightly toleranced at the hard interface after curing. It is clear from figure 1 that second line mold tools (42) have mold details of at least two types of stiffeners. The resin injection ports (26) are connected to a source of RTM resin (column 5, lines 28-31). The newly added limitation about the tight tolerance of the molded article is intended use and does not materially distinguish the structure of the apparatus over that of Leoni et al.

8. Claims 1, 2, 6, 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Burgess et al (5,902,535: figures 1-13 and column 3, lines 43-65).

A mold assembly (10) for distributing a resin throughout a dry fiber preform (20) to form a composite structure, said mold assembly comprising: a first mold line tool (12) supporting the dry fiber preform; a second mold line tool (30, 32) disposed on a portion of the dry fiber preform to form a hard interface between the second mold line tool and the portion of the dry fiber preform; a vacuum bag (column 3, lines 56-58) encapsulating the second mold line tool and forming an air-tight seal around the hard interface; a resin supply in the form of a resin film (18) connected in fluid communication with the dry fiber preform and supplying resin to the hard interface; and a vacuum supply (inherent due to the language ("The entire assembly is then bagged with a silicon rubber vacuum bag,

Art Unit: 1722

which is sealed, and air is vacuumed out of the bag.”) connected in fluid communication with the mold assembly, supplying vacuum pressure to the hard interface and drawing excess resin away from the hard interface such that the composite structure is tightly toleranced at the hard interface after curing. The entire assembly is placed within an autoclave, hence the vacuum line must go through the autoclave. The newly added limitation about the tight tolerance of the molded article is intended use and does not materially distinguish the structure of the apparatus over that of Burgess et al.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1722

11. Claims 14, 16, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni et al taken together with Taricco (US005441692A: figures 1-5; column 2, lines 13-15 and 54-65).

Leoni et al disclose a mold tool as discussed supra wherein the dry fibers are impregnated with resin by resin transfer molding such that the injection step displaces the flexible mold assembly after vacuum has been drawn and then increased pressure is applied inside chamber (38) to squeeze out excess resin. The reference states that composite articles formed from prepregs have fiber-to-resin ratios of 60 to about 65 percent (column 2, lines 5-9). The reference further states that composite articles fabricated according to the apparatus and method of the *present invention* have fiber-to-resin ratios that provide good mechanical properties, i.e., comparable to composite articles fabricated from prepregs (column 2, lines 43-48). It is the examiner's position that one of ordinary skill in the art would interpret the fiber-to-resin ratio formed by the apparatus of Leoni et al to be around 60-65 percent fiber. Thus, the uncured fiber and resin composite after at least the second pressurization step has a fiber-to-resin ratio of around 60-65 percent and thus meets the limitation of claim 14. The reference does not teach an autoclave having a pressurized chamber.

Taricco discloses a similar apparatus for squeezing out excess resin to increase the fiber to resin ratio of a fiber reinforced composite article wherein the mold assembly (28, 24) is placed inside an autoclave tank (14). The autoclave tank is pressurized to squeeze out excess resin as illustrated in figure 5.

Art Unit: 1722

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the apparatus of Leoni et al by using an autoclave as disclosed by Taricco as the use of an autoclave allows for the a plurality of different molds to be used with the autoclave instead of designing a specific chamber for each mold as in Leoni et al.

Allowable Subject Matter

12. Claims 3-5, 10-13 and 17-19 are allowed for the reasons of record.

Specification

13. The previous request for a new copy of the specification is withdrawn as the PACR copy in the IFW is suitable.

Response to Arguments

14. Applicant's arguments filed January 29, 2004 have been fully considered but they are not persuasive. Applicants argue that claim 1 has been amended to recite a tight tolerance that is within +/-0.015 inches or less; however, such is a result of the structure of claim 3 that is not claimed in claim 1. The tolerance language is merely intended use, which does not structurally define the apparatus of claim 1 over the structure of Leoni et al or Burgess et al. The examiner has already indicated that the feature of the external locating fixture rigidly fixed to the inner mold line tool through an opening in the vacuum bag makes claim 1 allowable (current redrafted claim 3 in independent format).

Applicants have clarified claim 14 to positively recite the fiber-to-resin ratio of the preform. As such was previously claimed, this action is made non-final; however,

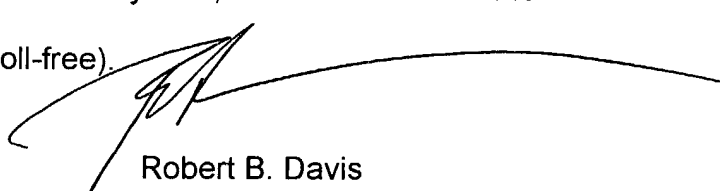
Art Unit: 1722

please note the examiner's position regarding the fiber-to-resin percentage of Leoni et al which is about 60-65 percent. Applicant's arguments regarding claim 14 is thus moot in regard to the fiber-to-resin percentage. The argument regarding simultaneous pressure bleed and curing is intended use in regards to the apparatus and not likely. While some curing may occur during bleeding, it is clear to one of ordinary skill in the art that simultaneous curing and bleeding would significantly hinder the bleeding due to the increase in the viscosity of the resin during curing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert B. Davis whose telephone number is 571-272-1129. The examiner can normally be reached on Monday-Friday 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Robert B. Davis
Primary Examiner
Art Unit 1722

4/13/04